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	Autore	Brauer Fred
	Titolo	Mathematical Models in Epidemiology [[electronic resource] /] / by Fred Brauer, Carlos Castillo-Chavez, Zhilan Feng
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	Descrizione fisica	1 online resource (XVII, 619 p. 121 illus., 67 illus. in color.)
	Collana	Texts in Applied Mathematics, , 0939-2475 ; ; 69
	Disciplina	614.4
	Soggetti	Biomathematics Probabilities Mathematical models Physiological, Cellular and Medical Topics Probability Theory and Stochastic Processes Mathematical Modeling and Industrial Mathematics
	Lingua di pubblicazione	Inglese
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	Livello bibliografico	Monografia
	Nota di contenuto	Introduction; A prelude to mathematical epidemiology -- Simple compartmental models for disease transmission -- Endemic disease models -- Epidemic models -- Models with heterogeneous mixing -- Models for diseases transmitted by vectors -- models for tuberculosis -- Models for HIV?AIDS -- Models for influenza -- Models for Ebola -- Models for malaria -- Dengue fever and the Zika virus -- Disease transmission models withagedpendence -- Spatial structure in disease transmission models -- Epidemiological models incorporating mobility, behavior, and time scales -- Challenges, opportunities, and theoretical epidemiology. .
	Sommario/riassunto	The book is a comprehensive, self-contained introduction to the mathematical modeling and analysis of disease transmission models. It includes (i) an introduction to the main concepts of compartmental models including models with heterogeneous mixing of individuals and models for vector-transmitted diseases, (ii) a detailed analysis of models for important specific diseases, including tuberculosis, HIV/AIDS, influenza, Ebola virus disease, malaria, dengue fever and the Zika virus, (iii) an introduction to more advanced mathematical topics,

including age structure, spatial structure, and mobility, and (iv) some challenges and opportunities for the future. There are exercises of varying degrees of difficulty, and projects leading to new research directions. For the benefit of public health professionals whose contact with mathematics may not be recent, there is an appendix covering the necessary mathematical background. There are indications which sections require a strong mathematical background so that the book can be useful for both mathematical modelers and public health professionals. .